CHARLES WATKINS MERRIFIELD, F.R.S.

MR. CHARLES WATKINS MERRIFIELD, F.R.S., who died at Hove on the 1st inst., at the comparatively early age of fifty-six, was a native of Brighton. Having entered for the Bar, he in 1847 received from the then Marquis of Lansdowne an appointment in the Education Department of the Privy Council Office. Though called to the Bar in due course, he never practised, but was speedily promoted to the office of an Examiner, the duties of which he discharged with marked attention and success, while finding time for other work which made for him a name among men of science. Though well versed in Greek and Latin, as well as in the classic authors in French and Italian, both of which languages he wrote well and spoke fluently, the bent of his mind was decidedly towards the more exact sciences. He was an early member of the Royal Institute of Naval Architects, of which he was for many years Honorary Secretary, receiving a handsome testimonial on his retirement in 1875. Some mathematical papers he had contributed to the *Transactions* of some of the learned societies, and especially some memoirs on the calculation of elliptic integrals in the *Philosophical Transactions*, led to his election as a Fellow of the Royal Society in 1863. In 1867 the Government established the Royal School of Naval Architecture and Marine Engineering at South Kensington, and Mr. C. W. Merrifield, at the request of the authorities, accepted the office of Vice-Principal. He only intended to take this as a temporary measure, but as the result of the lamented death of Mr. Purkiss, who was to have been Principal, Mr. Merrifield was appointed to that office. On the transfer of the Institution to Greenwich in 1873, he resumed his office of Examiner in the Education Department. Mr. Merrifield was a frequent attendant at the annual meetings of the British Association, and filled the office of Vice-President of its Section of Mechanical Science at the Brighton meeting in 1875, and was President of the same Section at the Glasgow meeting in the following year. He served on many important committees of that Association; one of these was the committee whose report on the stability, propulsion, and seagoing qualities of ships in 1869 was drawn up by him, and another was the committee for reporting on Babbage's celebrated analytical machine. Mr. Merrifield was a member, and in due course became President, of the London Mathematical Society, and he held the office of Treasurer until he was compelled by his health to resign it in 1882. To some of the leading scientific journals and periodical publications his contributions, extending from 1853, have been very numerous; they may be found in the publications of the Royal Society, the *Philosophical Magazine*, the *Assurance Magazine*, the *Messenger of Mathematics*, &c. His acquaintance with mathematical arithmetic, methods of interpolation, and tabular work in general, was very wide and complete. Mr. Merrifield edited many of the works in the Text-books of Science published by Messrs. Longman, and himself wrote a successful treatise on arithmetic and mensuration as one of that series. Some of his papers on the difficult and scientifically interesting subject of sea waves were translated into Italian for the *Rivista Marittima*, in which they appear, and a footnote to one of them, after bearing testimony to the author's extensive knowledge and excellence of style, expresses the satisfaction of the editor at his adding to these qualifications that of "writing correctly our language." He was closely connected with the Association for the Improvement of Geometrical Teaching from its foundation, and took an active and leading part in the work of the Association. Mr. Merrifield served on several important Royal Commissions, including one on the seaworthiness of ships, of which the Duke of Edinburgh was President. During the last few years he frequently sat as scientific assessor to Mr. Rothery in the Wreck Court. A part of his unofficial work consisted of the conduct for many years of the mathematical part of the May examinations of the Science and Art Department. All his arrangements for this purpose were completed in 1882, when, in April of that year, he was prostrated by an attack of apoplexy. He had so far recovered as to give hopes that his life might be spared for some years, but on October 18 last he was seized with a third attack, from which he never rallied.

GEOLOGICAL SURVEY OF PRUSSIA

THE Report of this important Survey for 1882 has just been issued as a well-printed octavo volume with maps, sections, and plates of fossils. The first division is devoted to an account of the operations of the Survey in the field. These were conducted in the Harz, where the keen-eyed Lossen still wields his powerful hammer among the eruptive rocks of that classic region; where, also, Dr. von Groddeck and Herren Halfar, Dames, Branco, and von Koenen bore a share; in northern and eastern Thuringia and the Thuringerwald, where ten geologists were engaged; in Hesse-Nassau, with a force of five surveyors; in the southern part of the Rhine province, where Herr Grebe was at work; in Silesia, where the Survey was commenced by Dr. Dathe; in the Berlin district, where the superficial deposits and agricultural features were mapped, and the special geological and agricultural map of that district, consisting of thirty-six sheets, was completely surveyed; in the low grounds about Stendal and Gardelegen, in the plain of the Lower Elbe, and further east in West and East Prussia; and lastly among the diluvial and alluvial formations to the north-west of Halle.

In the course of the year eighteen sheets of maps and sections were published, including fourteen of the geological-agricultural survey of the Berlin district and four sheets of the map of older formations. The total number of sheets now published amounts to 109. There were likewise issued in 1882, besides the Annual Report, three parts of the Transactions of the Survey: viz. an account of the Coal-basin of Lower Silesia and Bohemia, by A. Schütze; descriptions of the Regular Echinids of the North German Chalk, by C. Schlüter; and a monograph of the species of Homalonotus in the Lower Devonian rocks of the Rhine, by C. Koch.

The plan of operations for 1883 included further surveys in the Harz, Thuringia, and the Thuringerwald, Hesse-Nassau, Rhine province, Silesia, and the great lowlands of Prussia.

The most important feature of the Annual Reports of the Prussian Geological Survey is the series of papers by members of the staff and others, with illustrative coloured maps and sections. Of these papers no fewer than twenty-two are published in the Report for 1882, including four by geologists not attached to the staff, and amounting in all to nearly 700 pages, with 23 plates of maps, sections, and fossils. Among these the following important communications may be cited:—"The Kulm of the Upper Harz," and "The Kersantite Dyke of the Upper Harz," by A. von Groddeck; "The Fauna of the Taunus Quartzite of the Rhine," by E. Kayser; "Preglacial Freshwater Formations in the Diluvium of North Germany," by K. Keilhack; "The Variolite-bearing Kulm Conglomerate of Hausdorf in Silesia," by E. Dathe; "New Borings in East and West Prussia," by G. Berendt and A. Jentzsch; "The Lower Devonian Rocks of the Siegerland and their Associated Veins," by H. Schmeisser; "The Trough of Eifel Limestone of Hillesheim," by E. Schulz.

NOTES

PROFESSOR SYLVESTER has been elected a Foreign Member of the Royal Academy of Sciences of Göttingen, of which he was previously a Corresponding Member. *Science*, in speaking of Prof. Sylvester's departure from America, says:—"Prof. Sylvester's departure removes from the University not only the most distinguished scientist but the most interesting personality connected with it; and his absence will make a gap in the general life of the University no less than in his own department. It is somewhat noticeable that no American college has conferred an honorary degree upon him during his residence in this country."

At a meeting on Tuesday, in connection with the memorial to the late Mr. Spottiswoode, Mr. De La Rue stated that he believed a portrait would be painted by Mr. John Collier, and that it would be placed along with those of other presidents of the Royal Society, in the Society's rooms.

The death is announced, in his fifty-third year, of Mr. John Henry Dallmeyer, the well-known optician.

Dr. Johnston-Lavis writes to us from Naples, Jan. 10:—"For some six days the seismographs at the Vesuvian Observatory have been in a disturbed state, and on Monday, January 7, at 1.48 p.m., a distinct shock was registered. As the sirocco was blowing, the mountain was enveloped in fog and cloud, so that on Wednesday morning when the news arrived at Naples of an eruption during the night it was received with half incredulity. The volcano appears to have commenced its violent throes about 1 a.m. on the 9th, when there issued a stream of lava which has flowed down the north-north-west side of the cone and crossed the Atrio del Cavallo. Those who were fortunate enough to look towards the mountain at about 2.30 a.m. on Wednesday morning describe the sight as splendid. The maximum explosive violence was at about 10 a.m. We passed the afternoon and evening on the mountain between the observatory and the lava stream, but were paralysed by the quantity of cloud, which prevented a near approach. To-day the view of the mountain has cleared up, but the activity seems to have much diminished. I hope to visit and photograph the crater to-morrow, when I will send more details." The *Standard's* Naples correspondent, writing on the 11th inst., says:—"The violent eruption of Vesuvius has come to a sudden close. The new mouth, which had opened just below the old crater, and from which a large stream of lava issued, flowing down the north-eastern side of the mountain, has to-day ceased to be active. On examination of the old crater, a fissure can be seen directed in a straight line to the new mouth. No signs of similar activity have been experienced since 1875, and a much stronger eruption is now looked for by Prof. Palmieri."

We understand that Prof. McIntosh, who has undertaken some investigations for the Trawling Commission, is about to institute inquiries at St. Andrew's in connection with the Fishery Board for Scotland, in order to throw some light on the habits and time of spawning of the sole, turbot, and other flat fish. These investigations are intended to enable the Fishery Board, by artificial cultivation or otherwise, to increase the supply of these important and much-esteemed fishes, and bring them within the reach of the general community more than is at present possible, owing to their being in great part imported from Grimsby and other fishing stations, and where, the supply being often very limited, the prices are extremely high. In this and other work we believe the Fishery Board is making arrangements to provide Prof. McIntosh with tanks and other appliances, so that, in addition to assisting the Board in its scientific investigations, he will be better able to prosecute his inquiries for the Trawling Commission. It is anticipated that, while the sole and other flat fish are being studied at St. Andrew's, the herring and its allies will be investigated in a laboratory to be formed by the Fishery Board at North Berwick. Besides Prof. McIntosh, it is expected that Prof. McKendrick of Glasgow, Prof. Stirling of Aberdeen, and Prof. Schäfer of University College, London, will assist in these investigations. It is also interesting to note that, in addition to this work which it is intended to undertake, the fishery officers of the Board, at its twenty-six stations on the coasts of Scotland, and the Board's cruiser *Vigilant*, are engaged with great success in collecting materials for the Board, which, when examined, will go far to clear up many of the mysteries as to the food of fishes. The materials collected are being sent from time to time to the University of Edinburgh, where they are examined by Prof. Cossar Ewart, the convener of the Scientific Investigation Committee of the Fishery Board, and by Mr. J. Duncan Matthews, one of the laboratory assistants.

The thirty-seventh annual general meeting of the Institution of Mechanical Engineers will be held on Thursday, January 24, and Friday, January 25, at 25, Great George Street, Westminster. The chair will be taken by the President at half-past seven p.m. on each evening. The following papers will be read and discussed as far as time will admit:—On Thursday, 24th, Experiments on Friction: Report of the Research Committee (adjourned discussion); On the Consumption of Fuel in Locomotives, by M. Georges Marié, of Paris; on Friday, 25th, On the Physical Conditions of Iron and Steel, by Prof. D. E. Hughes, F.R.S.; On Portable Railways, by M. Decauville, of Petit-Bourg, Paris; On the Moscrop Engine Recorder, and the Knowles Supplementary Governor, by Mr. Michael Longridge, of Manchester.

We are glad to see that Dr. Doberck's enterprise is meeting with the approval it deserves in Hong Kong and China. "Dr. Doberck, the Government Astronomer, who arrived at Hong Kong a few months ago," the *Hong Kong Free Press* of Nov. 6 says, "has since been most usefully employing his time in visiting the different coast ports and Formosa, and returned from the latter yesterday. He has, we understand, verified a number of instruments belonging to the Imperial Maritime Customs of China, and has studied the geographical conditions of the coast as bearing on meteorology, a very necessary matter in order to arrive at accuracy in discussing observations. We are glad to learn that the Chinese Imperial Maritime Customs Authorities evince a strong disposition to cooperate with the Hong Kong Observatory in the matter. It is of the first importance, in order to be able to arrive at any definite results so as to be able to forecast the weather, and compile a reliable weather table, that the meteorological observations conducted at different ports on the China coast should be made at the same hour, in the same manner, and by instruments corrected to the same standard. It is to be hoped therefore that Sir Robert Hart will allow his able staff to take part in this work, and that monthly registers will be kept at all the treaty ports from Newchwang to Pakhoi and transmitted to the Hong Kong Observatory, which, by situation, is best fitted to become the centre of such a system. The Observatory in this colony is on a very modest scale, and the vote for its maintenance is a mere trifle when the good that is to be gained from it is considered, and we trust that the efforts of the astronomer will not be paralysed by too great attention to economical considerations on the part of the local government. The Inspector-General of Customs has always displayed a most laudable desire to promote improvements in lighting the coast and facilitating navigation; and he will, we hope, see his way to promote the success of Dr. Doberck's work by cooperating with the Hong Kong Observatory. The Sicawei Observatory has done some good work, but its operations have necessarily been limited owing to the absence of reliable observations at the ports. What is expected from the Government Astronomer is that ultimately he may be able not only to give forecasts of the weather but to furnish such a guide to mariners as would render it possible to make voyages and to avoid typhoons or bad weather. The value of such a service is not measurable by mere money; it means greater security to life and property, fewer risks to shipowners, and a diminution of loss to underwriters. It would, in short, have an appreciable effect on commerce generally, and the business of this great shipping port in particular." We trust that this just and accurate view will prevail among those in a position substantially to help Dr. Doberck in his valuable work.

PROFESSOR FOREL (Morges) writes in the *Gazette de Lausanne:*—We are again passing through an earthquake period. On December 18, 1883, at 6.25 a.m., a shock was observed at Neufchâtel; on December 22, at 3 a.m., another one at Cortaillod, and at 4 a.m. at Neufchâtel and Cortaillod. On December 17 and 18 earthquakes were noticed in various parts of Italy, and on December 22, at 3.39 a.m., one at Lisbon.—A rather violent shock, followed by another an hour afterwards, was noticed at Laibach on December 31 at 3.30 a.m.—At Sadikli, near Brussa, an earthquake caused some destruction on January 3, fortunately unattended by loss of life.—The Siberian newspaper *Ssibir* reports that at Korssa Kowskoje Sjelo on Lake Baikal no less than nine earthquakes occurred during the month of September last, *i.e.* on the 3rd, 7th, 12th, 14th, 17th, 20th, 24th, 27th, and 30th of that month (old style).—A sharp shock, causing some alarm, was also felt at Messina at 11.30 on the night of the 13th inst., but no damage was done.

AT 5.25 p.m. on January 11, at Fort William, a ball of light, shaped like a pear, with the broad end downwards, was seen as if suspended midway between Ben Nevis and the Caledonian Valley. It descended till near the surface of the earth, and then it burst, lighting the whole valley. In colour it resembled the electric light. Mr. W. Gunn writes from Berwick-on-Tweed:—"On January 11, at 5.33-34 p.m., I saw a remarkably brilliant white meteor—certainly as bright as Venus—rather low down in the sky to north-north-west. Apparent motion about in a line from Vega towards a point in the horizon nearly vertically below the end of the tail in Ursa Major; seen for two or three seconds moving slowly; seemed to largely and suddenly increase in size and brightness just as it was lost to view behind some trees. Perhaps this was the bursting seen at Fort William."

THE list of lectures to be delivered before the Association Scientifique de France has been published. They will be delivered as usual at the Sorbonne, under the control of M. Milne Edwards, president of this association. Some of them will be delivered by members of the council of the Association Française, a rival institution, and it is pretty certain that the two societies will be incorporated into one single body. The Association Scientifique is the older of the two, and was created by Leverrier about twenty years ago.

WE learn from *Science* that Mr. H. M. Wilson, in charge of one of the topographical parties in Prof. A. H. Thompson's Wingate division of the U.S. Geological Survey, surveyed, during the season of 1883, about ten thousand square miles in North-Western New Mexico and North-Eastern Arizona. The area covered by his work lies between parallels of latitude 36° and 37°, and extends from meridian 109° to 111°. He also worked some smaller detached areas outside of the limits thus indicated. This region has hitherto remained a *terra incognita*, partly on account of its aridity and barren condition, and partly on account of the difficulty of traversing it. So little has been known of it that within the area surveyed by Mr. Wilson a small mountain range has been indicated as occupying two places on the same map. On the engineer's map of 1879 it is called Calabesa Mountains in the northern place, and Squash Mountains in the southern; and on the Land-Office Map for 1882 both are indicated without names. Mr. Wilson's work proves that they are one and the same, occupying a position very close to that assigned to the Squash Mountains.

NEWS has been received in Berlin from the African traveller, Dr. Richard Böhm, dated July, 1883, from Qua Mpara, on the western shore of Lake Tanganyika, near the estuary of the Lufuku River. Dr. Böhm and his companion, Paul Reichardt, seem to have settled there for some time. Before reaching Qua Mpara they met with considerable difficulties, having to combat the natives, by whom Dr. Böhm was seriously wounded. He left the Belgian station Karema at the end of June, and reached Qua Mpara on July 8. There he was seized by a fever, yet he retained sufficient energy to complete his zoological investigations (principally ornithological) and to forward the results to Europe. All his collections and his scientific instruments were unfortunately destroyed by fire on the Mto ja Ugalla. Dr. Böhm, however, set to work again and commenced making new collections, which he left at Karema in safe keeping. Amongst other things he is reported to have discovered a beautiful freshwater Medusa, with a broad, umbrella-shaped body and numerous long and short prehensile filaments; he found it in Lake Tanganyika. At the same time a report from Herr Paul Reichardt was received describing in detail the Soko so well known to readers of Livingstone. The animals live together in herds of from six to twenty individuals, and build nests on trees at an elevation of 8–19 m., the nests measuring from 1–1·2 m. in diameter. Reichardt found groups of nests in which he counted over fifty separate nests. Up to the time of sending the report Reichardt had not succeeded in securing a specimen.

IN the *Bolletino of the Italian Geographical Society* for December, 1883, Sig. Colini continues his valuable notes on the information supplied by Cavaliere Luciòli on the topography and ethnography of the Upper Amazons regions. The paper is accompanied by a large map of the Huallaga and Ucayali river basins, based on Petermann's South America, but corrected and supplemented by fresh data furnished by Luciòli. The position of a large number of tribes, many hitherto unknown, is determined along the banks of the head waters of the Amazons, and to these is added a list of about sixty others, supplied by Dr. Colini from the old records and the writings of recent explorers. But it is obvious that many of these are mere duplicates or even triplicates of the same tribes due to careless transcription, ignorance, change of tribal designations, and other sources of confusion. Thus Carapacho and Picambio are only older names of the present Caribes and Remos of the Middle Ucayali. So with the Amalmacas, Chuntagurus, and Tambas of the older writers, who may be safely identified with the modern Amahuacs, Chontaguiros, and Campas respectively. Nor, as Colini rightly remarks, are these names always distinctly tribal, but the designations of mere clans, or small family groups, or members of larger divisions. These are continually shifting their locality, disappearing, or becoming absorbed in more powerful groups, another fruitful source of perplexity in the ethnical terminology of the Amazons regions. But, after making all due allowance for this uncertain nomenclature, there still remains a surprising number of really distinct tribal groups scattered along the banks of the Huallaga, Napo, Ucayali, and other Amazonian streams, groups differing from each other always in speech and frequently in habits, usages, and physical type.

ON January 26 the Berlin Wissenschaftliche Central Verein and Humboldt Academy will celebrate the fiftieth anniversary of its foundation.

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus* ♂) from India, presented by Mr. C. S. Norman; two Great Kangaroos (*Macropus giganteus* ♂ ♀) from New South Wales, presented by the Zoological and Acclimatisation Society of Melbourne; a Dorsal Squirrel (*Sciurus hypopyrrhus*) from Central America, a Greater Sulphur-crested Cockatoo (*Cacatua galerita*) from Australia, twenty-five Indian Crocodiles (*Crocodilus palustris*) from India, deposited.

OUR ASTRONOMICAL COLUMN

PARALLAXES OF SOUTHERN STARS.—We learn from Mr. Gill, H.M. Astronomer at the Cape, that he has completed a memoir on the parallax of some of the principal southern stars, founded upon observations by himself and Dr. Elkin; the memoir contains investigations on parallax of

By Gill	α Centauri (two series with different comparison-stars); Sirius; ε Indi; Lacaille 9352 (Gould's star with proper motion of 7″); o^2 Eridani, and β Centauri.
By Elkin	α Centauri (two series with different comparison-stars from Gill's); Sirius; ε Indi (also with different stars); ζ Tucani; *e* Eridani and Canopus.

Mr. Gill's important memoir has been communicated to the Royal Astronomical Society, and its publication will doubtless be awaited with much interest by astronomers.

The large proper motion of Lacaille 9352 was detected by Dr. Gould, and announced in No. 2377 of the *Astronomische Nachrichten.* The annual P.M. in arc of great circle is 6″·96 in the direction 79°·2. It is a star of 7·5 m. in Piscis Austrinus: Mr. Stone's place for 1880·0 is in

R.A. 22h. 58m. 5·43s., N.P.D. 126° 32′ 40″·0.

In only one instance has the existence of a larger proper motion been discovered, viz. in that of the well known 6·7 m. Groombridge 1830 in Ursa Major, where the amount is 7″·05. *e* Eridani, 4·4 m., is in R.A. 3h. 15m. 8·16s., N.P.D. 133° 31′ 46″·8 for 1880, according to Stone, who attributes to it an annual proper motion of 3″·0 in the direction 75°·5. ζ Tucani, a fourth magnitude, is in R.A. 0h. 13m. 48·60s., N.P.D. 155° 34′ 49″·0 for 1880, with an annual proper motion of 4″·35 on an angle of 74°·8, by Stone's values.

Mr. Gill expects to be in England early in February, to superintend a large amount of official printing, for which he brings copy with him.

PONS' COMET.—For a few evenings this comet will form a pretty conspicuous object as it descends in the south-western sky; after it ceases to be visible in Europe observations may be continued at the observatories of the other hemisphere for several months. On March 26 the theoretical intensity of light will be ten times, and a month later, five times, greater than at the beginning of September, when the comet was discovered through the diligent scrutiny of the heavens, followed up by Mr. Brooks, who found it considerably beyond the limits of the sweeping ephemerides then in the possession of observers. Mr. S. C. Chandler has conjectured that a meteor-stream may be connected with this comet. MM. Schulhof and Bossert's orbit for 1884 gives the radiant in R.A. 197°·8, Decl. + 67°·3.

THE MINOR PLANETS.—The *Berliner Astronomisches Jahrbuch* for 1886 contains elements and approximate ephemerides for the present year of 231 of the known members of this extensive group, only four therefore being omitted in the absence of the necessary data. In addition there are twenty-six accurate opposition-ephemerides. Four of these small planets approach the earth, within her mean distance from the sun, in 1884. At the end of December No. 132 *Æthra*, situate in the vicinity of α Orionis, will approach the earth within 0·85, and shining as a star of the ninth magnitude, will afford another favourable opportunity for the investigation of solar parallax, on the method advocated by Mr. Gill.

SCIENCE IN RUSSIA[1]

THE *Memoirs* (*Zapiski*) *of the Novorossian Society of Naturalists*, at the University of Odessa, founded only in 1873, have already reached their eighth volume, and contain a good deal of valuable work. Confining our analysis to the last three volumes, we notice in them the following papers:—In the domain of geology Prof. Sintsoff contributes several papers. One of them is an elaborate monograph on the sponges from the chalk of Saratoff. Revising his former work on the same subject, and taking advantage of the well-known work of Prof. Zittel, as well as of new extensive collections, M. Sintsoff creates a number of new species and four new genera: *Mæandroptychium*, which he proposes to substitute for those of *Cœloptychium*, *Etheridgia*, and *Tremabolites; Labyrintholites*, closely allied to *Plocoscyphia; Polyscyphia*, akin to the preceding; and *Zittelispongia.* The author describes (with figures) seven species of the first, four species of the second and the third, and one species of the fourth, as well as the following species:—*Cuculispongia triloba*, Trautschold, *Craticularia cylindrica*, Mischl.; two species of *Ventriculites*, two species of *Coscinopora*, *Leptophragma simplex*, T. Smith, *Actinosiphonia radiata*, Fisch., and the new species *Hallirhoa peskowi* and *Isoraphinia cavata.*—The same author contributes a second paper on Mesozoic fossils from Simbirsk and Saratoff (the first paper having appeared in vol. iv.), and describes the following species:—*Ammonites longispinus* and *caletanus*, *Scalaria dupiniana*, var. *rhodani*, *Astarte beaumontii*, *Panopæa neocomiensis*, and as new species *Aporrhais striata-carinata*, *Nucula subarduennensis*, and *Lucina neutralis.*—A third paper by the same author contains a description of the following Tertiary fossils of Novorossia:—*Dreissena rostriformis*, Desh., *Hydrobia mathildæformis*, Fuchs, *H. dimidiata*, Eichw., *Valvata variabilis*, Fuchs, *Neritina danubialis*, Pfeif., var. *liturata*, Eichw., *N. prevostriana*, Partsch., and *N. capillacea*, Brusina, from the Pliocene; *Trochus rollandianus*, d'Orb., *Phasianella kischinerviæ*, d'Orb., and as new species *Trochus minutus*, *semistriatus*, and *elegantulus*, *Hydrobia substriatula*, *Amnicola cyclostomoides*, and *Valvata pseudo adeorbis*, from the Miocene. All these fossils are represented in the plates.—M. Prendel contributes a paper on the geological structure of the districts of Elizabethgrad and Alexandria, in the government of Kherson. The rocks are granites, mostly as schists, and considered by the late Barbot-de-Marny as a product of metamorphism of sedimentary rocks, and very small patches of Huronian schists, covered with numerous isolated islands of Eocene. The whole is covered with the "White Sands," where M. Prendel has found a stem of *Cupressonoxylum severzovi*, Merklin (Miocene?), and with loess, which contains, besides the usual fossils, remains of *Arctomys bobac*, which does not now extend in Russia south of 52°–54° N. lat.—The same author contributes (vol. viii.) another paper on the crystalline rocks on the Bazavlouk and Saksagan Rivers, right tributaries of the Lower Dnieper. The paper is accompanied by a map of coloured sections of microscopic specimens of crystalline rocks.

The chief papers in these *Memoirs* are however devoted to comparative anatomy and zoology. Without attempting to summarise their varied contents, we can merely enumerate most of them. All are profusely illustrated with plates. In the sixth volume we notice a preliminary communication by Madame Olga Mechnikoff, on the anatomy of cartilaginous fishes; and a note, by Prof. H. Mechnikoff, on the larva of the *Anisoplia.*—M. Repyakoff contributes an elaborate paper on the morphology of the *Bryozoa.* Without attempting to determine the place that the Bryozoæ ought to occupy in systematic classification, the author devotes his special attention to the relations between the two great subdivisions of the Endoproct and Ectoproct Bryozoæ, and his paper is a valuable contribution to the work undertaken by Nitsche, Hatschek, Joliet, and Barrois.—M. Zabarinsky contributes a paper on the morphology of the Hydra.—In vol. vii. M. Buchinsky publishes a paper on the development of the earthworm, devoting his special attention to the development of its mesoderm and of its nervous system.—In vol. viii. M. Krasilschik contributes an elaborate paper on the development of the *Polytrema*, and the place it occupies with regard to other Flagellatæ; M. Repyakoff publishes a note on the larvæ of the *Polygordius flavocapitatus;* M. Depp, on the life of the Macropodes; and M. A. Kovalevsky, on the development of the Chiton.—In physiology we notice the researches, by M. Spiro, into the development of bile, being the result of various experiments, and accompanied with tables showing the dependence of its amount upon the food.

In botany we find the researches by M. Rishavi on the development of the organs of reproduction in *Dasya elegans* (vol. vi.); a list of lichens collected on Mount Castel in the Crimea, and determined by Dr. Brutann in Dorpat (vol. vii.); and a work, by M. Kojernikoff, on the anatomical structure of the corolla in flowers. The author has extended his researches

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[1] *Memoirs of the Novorossian Society of Naturalists* (*Zapiski Novorossiyskago Obschestra Estestvoispytateley*), vols. vi., vii., and viii. Odessa.